

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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Filing Date: March 14, 2008  
Confirmation No.: 3139  
Applicant: David Wollan  
Group Art Unit: 1794  
Examiner: not yet assigned  
Title: Alcohol Reduction in Beverages  
Attorney Docket: 3029-000089/US/NP

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

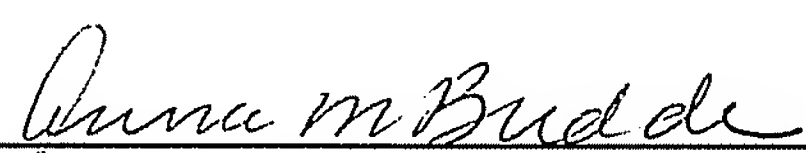
**SUPPLEMENTAL AMENDMENT**

Sir:

In the Amendment filed August 4, 2010, in the section "Evidence of Secondary Considerations," Applicants referenced an attached document entitled *Memstar Wows Judges with Competition Triumph*, p. 60-61, The Australian & New Zealand Grapegrower & Winemaker, July 2007. The referenced document was inadvertently omitted from that filing, and is attached at this time.

Respectfully submitted,

Dated: August 5, 2010

By:   
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# Memstar wows judges with competition triumph

John Hudswell

As proud sponsors of the inaugural Wine Industry Suppliers Association (WISA) WOW Award, *Grapegrower & Winemaker* congratulates Memstar as the winner with the company's Alcohol Adjustment (AA) innovation. The prize? A trip to the SIMEI exhibition in Milan in November 2007.

The ability to lower alcohol levels in wine is important for the wine industry and Memstar was able to demonstrate that in the past six months with about 50 million litres of wine treated through the AA process. In 2005-06 Memstar processed 5-6 million litres so in terms of a measurable and demonstrable WOW factor, and impact on the wine industry, that growth is what got Memstar the judge's vote.

The quest to please the palates of winelovers is never ending. Some like robust reds, while others prefer a fruity white, and there are some who prefer wines that don't pack such an alcoholic punch.

That was the cue for Memstar to become acutely involved in the wine industry.

It embarked on the trail of lowering the alcoholic level of wines but without lowering the quality and it found the answer with the innovative use of a specialised membrane.

In the past two years the technology has rapidly been embraced by winemakers around the world. In the past year the technology has been used in Australia, New Zealand, United States (Oregon, California), Chile, and South Africa. In June the technology was undergoing trials in France and similar trials are scheduled to be held in Argentina.

"The technology enables the energy-efficient reduction of alcohol in wines without heating the wine, Memstar business development

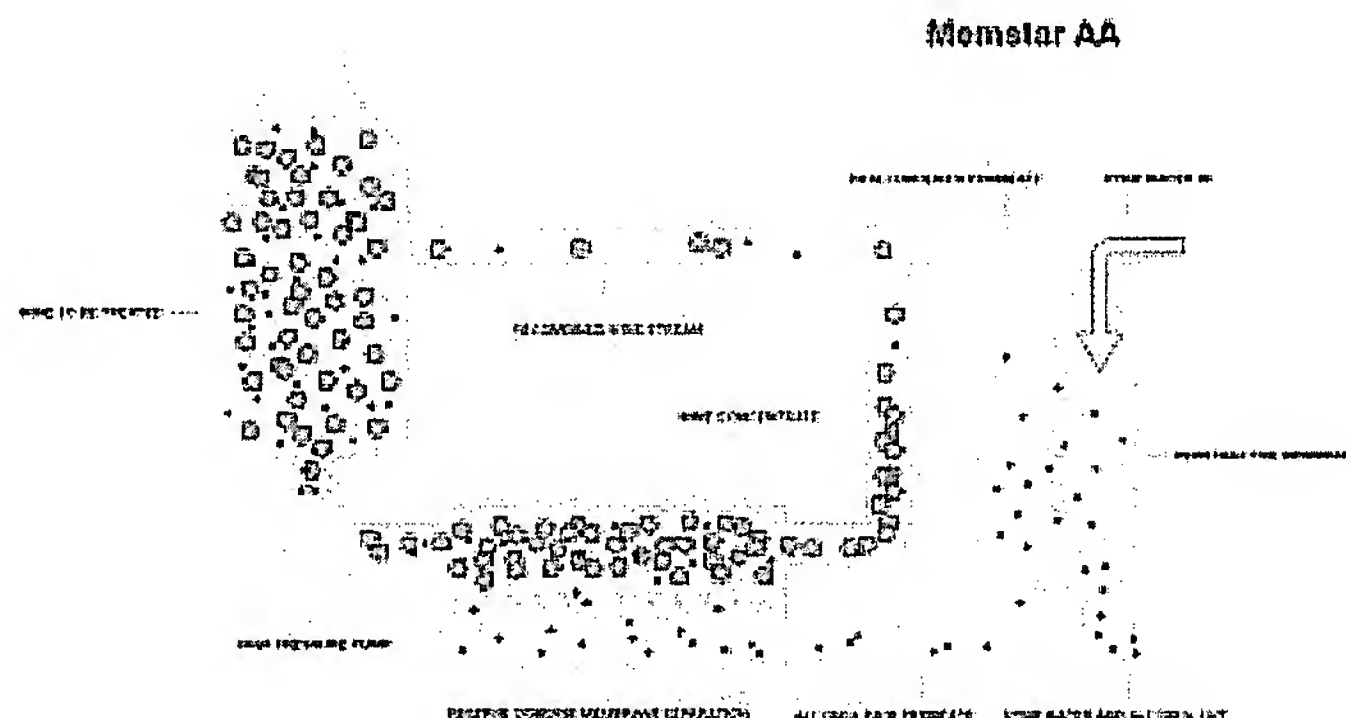


Fig. 1. Schematic diagram of the Memstar Alcohol Adjustment process.

manager Tim Grosser said "It is done entirely onsite with minimal wine volume reduction. "It reduces alcohol concentration without damaging flavour and aroma compounds. "It is an economic process and the energy consumption is very low compared to traditional alternatives."

The technology makes innovative use of a specialised membrane.

"This membrane is a hydrophobic hollow fibre or perstractive membrane," Grosser said.

"Memstar applied this technology to use a strip water to remove alcohol from wine RO permeate (liquid to liquid). "By applying RO permeate to this perstractive membrane the membrane performs very well with very infrequent cleaning required and stable performance.

"This approach also ensures that, essentially, only alcohol is removed from the wine with no loss of flavour or aroma compounds," Grosser said. Memstar optimised the technology by removing oxygen from strip water to prevent oxidation of wine and warming of wine permeate to enhance the capacity and economics of the process.

Over the past 20 years there has been a steady increase in the mean

alcohol level of wines from 12.4% in 1984 to 14.2% 2002 (analysis by the Australian Wine Research Institute).

This trend stems from winemakers' attempts to avoid unpleasant green fruit characters by leaving their grapes to hang longer as they strive for more mature flavours and tannins and softer acidity. The resultant higher sugar and hence high alcohol levels have been an unwelcome but necessary consequence of this pursuit of greater ripeness.

"Until the development of Memstar AA, winemakers had few acceptable options for dealing with this dilemma," Grosser said.

"The patented Memstar AA process is a 'closed loop' with two membrane barriers between the wine being treated and the strip water which removes the alcohol. "The actual alcohol stripping step is performed on reverse osmosis permeate which contains very little of the precious wine characters that would otherwise be lost. "The process is carried out in a closed, oxygen free environment and does not involve the addition of any extraneous material."

He said the process did not involve the addition of water to wine – a practice that is not permitted in most



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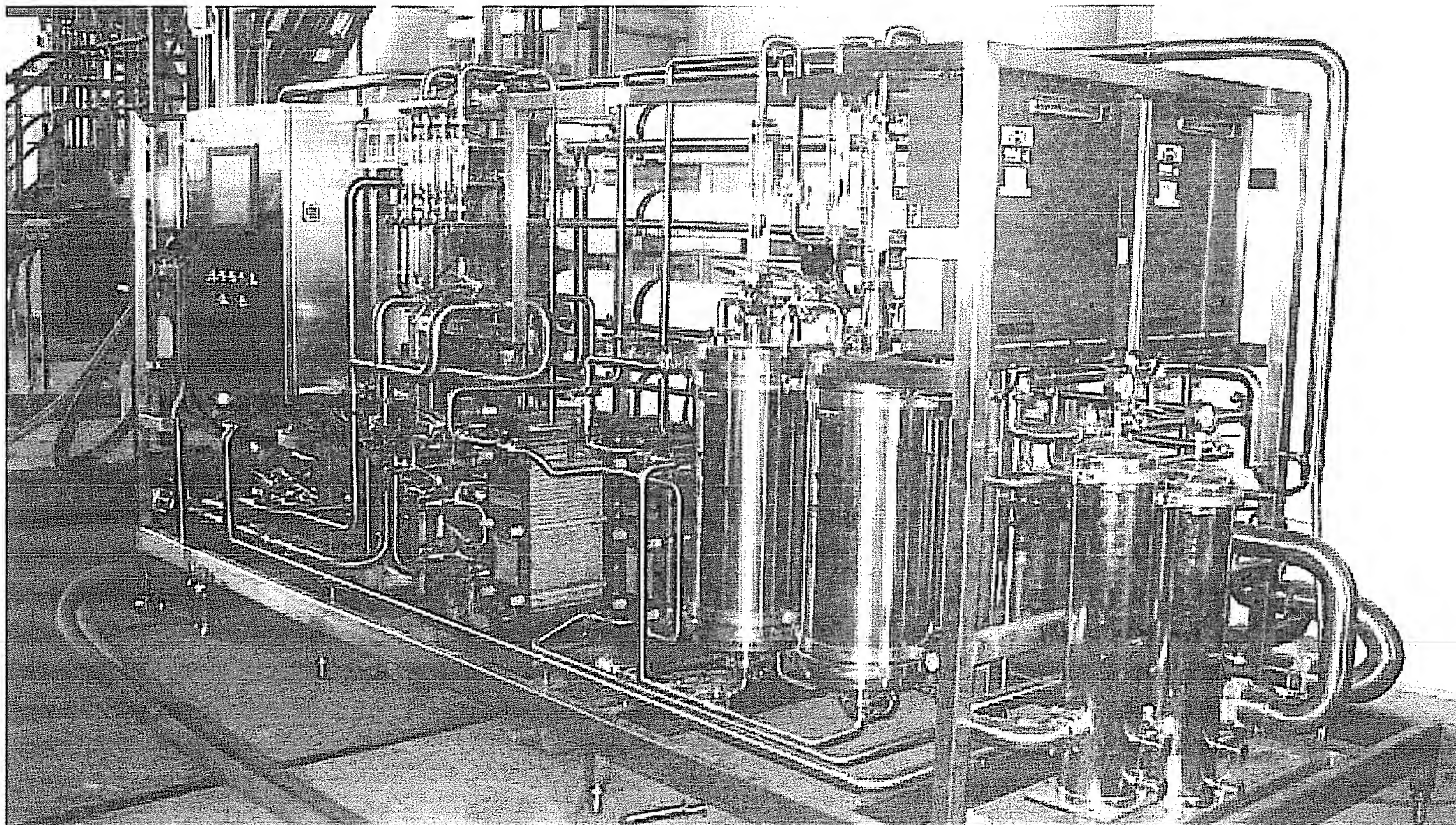


Fig. 2. A Memstar Alcohol Adjustment machine capable of over 200 litres of alcohol (LAL) removal per hour. Note the portability of the one skid containing all of the equipment.

wine-producing countries. It also avoids the legally dubious addition of water derived from other grape sources.

Grosser says the Memstar system allows the winemaker to perform 'sweet spot' trials at the commencement of the process and as it proceeds. "By monitoring progress as the 'sweet spot' is approached, winemakers can stop the process at their preferred alcohol level," Grosser said. Alcohol has a profound effect on a taster's perception of a given wine's quality and style. When a wine is reduced in alcohol without changing any other components, there are certain alcohol concentrations where the wine seems to stand out, displaying enhanced fruit expression on the nose and palate and improved mouth-feel. These points are called sweet spots. What is not so well appreciated is that varying the alcohol level by as little as 0.1% may be the difference between a sweet spot or not. Also, varying the alcohol can have a profound effect on the perceived style of a given wine. Depending on the alcohol content, for a given wine there may be more than one appealing sweet spot, corresponding to quite different styles.

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## Memstar provides Boar's Rock with greater flexibility

A trend to slightly lower alcohol wines in the past four or five years prompted Boar's Rock to take a closer look at the Memstar system. A Memstar unit was purchased and installed at its McLaren Vale site early this year, and, according to managing director, Mike Farmilo, initial trials have been successful!

He said many customers wanted to bottle at 14-15% alcohol, but harvesting at high baume, and with good sugar/alcohol conversions, their wines were generally ending up over 15%. The Memstar unit allows customers to reduce the alcohol to what tastes best for them, and to achieve a better balance of flavour and alcohol. Apart from the fact that the taste trend is changing, those who export wines have to be cognizant of taxation laws that come into effect when the alcoholic level is above 14%.

Farmilo said the Boar's Rock unit is portable so that it can be used at its other two sites, Waikerie and Langhorne Creek. He said operation of the new system was "reasonably simple" and Memstar had provided a good training and backup service.

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Creek. He said operation of the new system was "reasonably simple" and Memstar had provided a good training and backup service.

The Memstar AA alcohol adjustment process is available as a cost-effective, on-site service and is available on a short or long term hire basis or may be purchased outright.

*Memstar will be at WineTech in Adelaide beginning 29 July, so pay them a visit.*

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